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# **Understanding residents' capacities to support evacuated populations: A study of earthquake and tsunami evacuation for Napier Hill, Napier, Aotearoa New Zealand**

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**December 2019**

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## **ABSTRACT**

Due to a large regional subduction zone (the Hikurangi subduction zone) and localised faults, Napier City located on the East Coast of Aotearoa/New Zealand is vulnerable to earthquake and tsunami events. On feeling a long or strong earthquake people will need to evacuate immediately inland or to higher ground to avoid being impacted by a tsunami, of which the first waves could start to arrive within 20 minutes (based on the Hikurangi earthquake and tsunami scenario presented in Power et al., 2018). Napier Hill is one such area of higher land, and it is estimated that up to 12,000 people could evacuate there in the 20 minutes following a long or strong earthquake. To understand the capacity of Napier Hill residents to support evacuees, three focus groups were held with a diverse sample of residents from Napier Hill on 21 and 22 July 2019. A follow up email was sent to all participants a week after the focus groups, containing a link to a short six question survey, which was completed by 68 people, most of whom were additional to the focus group attendees. Data from the focus groups and the survey was analysed qualitatively using thematic analysis. The findings highlight that in general people were happy to host evacuees and offer support if they were in a position to do so. However, key issues in being able to offer support included the likely lack of resources available after a disaster, ranging from basic needs though to agency support. The research findings will directly inform Napier City Council and Hawke's Bay Civil Defence Emergency Management Group's planning for future readiness and response by providing valuable insights for evacuation planning.

## **KEYWORDS**

Earthquake, tsunami, evacuation, hosting, Napier

## **BIBLIOGRAPHIC REFERENCE**

Payne, B.A., Becker, J.S., Kaiser, L.H. (2019). Understanding residents' capacities to support evacuated populations : A study of earthquake and tsunami evacuation for Napier Hill, Napier, Aotearoa New Zealand. Disaster Research Science Report; 2019/01, Wellington (NZ): Massey University. 49 p.

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ISSN 2703-383X (online)  
<https://mro.massey.ac.nz/>

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## 1. INTRODUCTION

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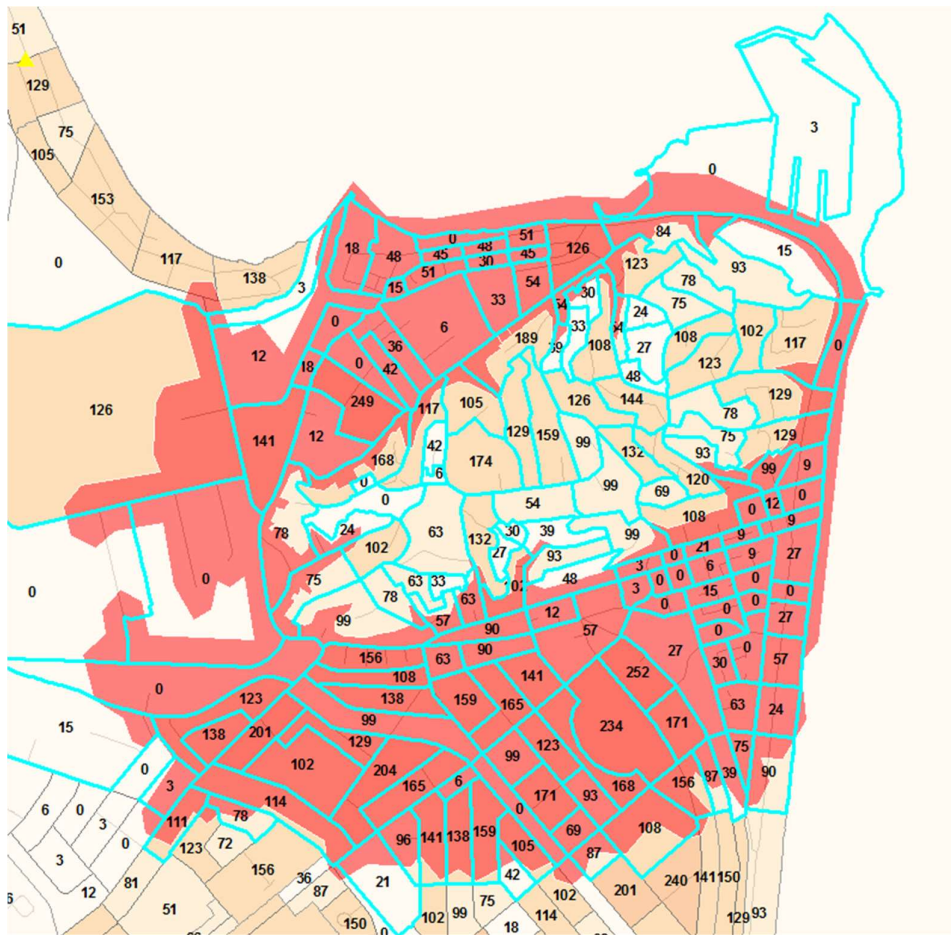
Napier City located on the East Coast of Aotearoa/New Zealand is particularly vulnerable to earthquake and tsunami impacts due to the combination of a large regional subduction zone (the Hikurangi subduction zone) and more localised faults. Given this risk, it will be necessary for people to evacuate immediately on feeling a long or strong earthquake to avoid being impacted by a series of tsunami waves that could start to arrive within 20 minutes<sup>1</sup>. People will need to evacuate inland or to higher ground, with Napier Hill being one such area of higher land.

It is estimated that up to 12,000 people could evacuate to Napier Hill within 20 minutes of an earthquake, although there are about 20,000 people for whom the Hill is the nearest high ground (Power et al., 2019). Evacuees would include local people living and/or working in low-lying at-risk areas, non-residents, tourists, elderly people, and students from schools and early childhood centres. Modelling indicates that approximately 10,000 local people in at-risk areas could evacuate to Napier Hill during the daytime, and just over 11,000 at night (Figure 1); these numbers could be larger if people evacuate to the hill from more than 20 minutes walking time away (Power et al., 2019). The modelled figures exclude those who may be in educational facilities (e.g. schools) and tourists. When adding together Napier Hill residents who live in the safe zone with potential evacuees, it is possible that approximately 15,000, and possibly as many as 20,000, could be stranded on the hill following an earthquake and tsunami event.

Many evacuees would be distressed, separated from families and their loved ones and some could be badly injured (Hawke's Bay Civil Defence Emergency Management Group, 2019; Malone et al., 2011). They would be likely carrying very few resources to survive the following days.

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<sup>1</sup> The peak of the first large waves, and the point at which extensive onshore inundation may be expected, is estimated to occur between 30-50 minutes after the earthquake in the Hikurangi scenario presented in Power et al (2018).



**Figure 1.** Potential population that would either evacuate from their houses up Napier Hill (red colour), or already be living on Napier Hill (buff coloured area enclosed by the red). Modelling is based on 2013 census data (Population Count: Usual Resident, Statistics New Zealand, 2013) and represents a spontaneous evacuation of residents for a long or strong earthquake. The modelling allows for 3 minutes reaction time and 17 minutes travel time based on average walking speeds. Data excludes those located in educational facilities (e.g. schools) and tourist populations.

Three 1.5 hour-long focus groups were held with a diverse sample of residents from Napier Hill on 21 and 22 July 2019 to understand the capacity of Napier Hill residents to support evacuees. A follow up email was sent to all participants a week after the focus groups, containing a link to a short six question survey. Focus group participants were asked to send the survey link to their wider network that lived or worked on the Hill, or who have children that attend school on the Hill, or who were otherwise connected with the hill suburbs in some way. As a form of ‘snowball sampling’, this approach enabled the research to capture a wider range of opinions across the Napier Hill population.



## BACKGROUND

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As New Zealand's largest and most active fault, emergency managers across multiple Civil Defence Emergency Management groups are developing an emergency response framework to prepare for a Hikurangi subduction zone rupture (East Coast LAB, 2019). It is not a matter of if the Hikurangi subduction zone ruptures, rather a matter of when, and the likelihood of an event triggering a major tsunami is significant (Clark et al., 2019; Fraser et al., 2013). The scale of impacts anticipated from an earthquake itself and a subsequent tsunami could be devastating for Napier. Consequently, enhancing community readiness and resilience is an ongoing and critical focus for local agencies like Hawke's Bay Civil Defence and Emergency Management (CDEM) group and Napier City Council (NCC).

By way of overview, Napier is a generally low-elevation coastal area of 106 square kilometres, comprising residential suburbs, commercial and industrial areas and some agricultural land including orchards and vineyards. Napier's population totaled 62,800 people as of June 2018 (Statistics New Zealand, 2018). However, during peak tourism season (January to March) the population of Napier swells significantly, with average numbers of visitors staying in Napier accommodation exceeding ~2,350 every night over this period (MBIE, 2019). This is partly due to Napier Port being a major hub for cruise ships.<sup>2</sup>

The majority of Napier's population is located on low-lying land within the tsunami evacuation zones (refer to Figure 2). Numerous accommodation facilities, schools (plus one tertiary education campus), early childhood centres and care homes or retirement villages form concentrations of people who may be less able to evacuate effectively in a local earthquake and tsunami due to mobility issues or deficiency in local knowledge.

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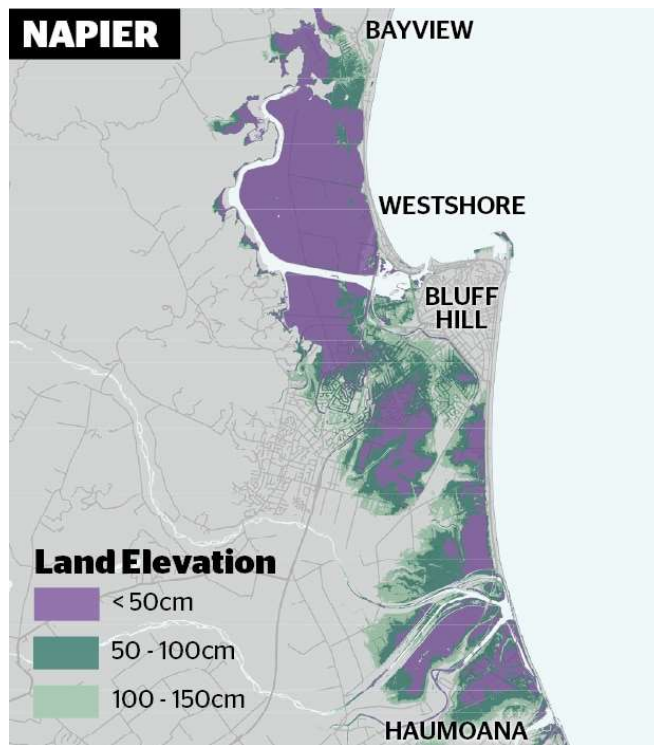
<sup>2</sup> In addition to being the gateway for many tourists to the Hawke's Bay on cruise ships, Napier Port is the fourth largest in New Zealand, handling cargo including forestry products and container shipments, with storage of timber and containers on site (Port of Napier Limited, 2012).



**Figure 2.** Overview of wider Napier Tsunami Evacuations Zones, showing the three zones of red - shore-exclusion zone; orange - area evacuated in distant and regional-source official warnings; and yellow – evacuation for all maximum credible tsunami (MCDem, 2008). (Source: Hawke's Bay Regional Council and Hawkes Bay Civil Defence Emergency Management Group).

Figure 3 outlines average land elevations across Napier City, which illustrates that a significant portion of the city and surrounding areas would be significantly affected by a tsunami. In terms of key topographical features, at the eastern shore of the city there is a steep gravel beach and berm stretching along the coastline south from Napier Hill, where it is approximately 7 metres above Mean Sea Level (MSL) to the confluence of the Tutaekuri, Ngaruroro and Clive Rivers, where it is 4 metres above MSL.

Northwest of Napier Hill, a tidal inlet and small marina separates the suburbs of Ahuriri and Westshore. The peninsula that Westshore is located on was elevated to 4-6 metres above MSL following the 1931 Hawke's Bay earthquake, and has since been heavily developed. Bay View is the most northern suburb of Napier, extending north around the bay. Much of the land around the present Ahuriri Lagoon was previously below sea level until uplift during the 1931 earthquake and due to artificial drainage in the years since (Hull, 1986). Much of this low-lying land has now been intensively developed into housing and industrial property, and the people who live and work there are at risk from tsunami due to very limited evacuation options.



**Figure 3.** Napier City land elevations above MSL (Source: Sharpe, 2015).

As shown by Figure 2, Napier Hill (comprising the suburbs of Bluff Hill and Hospital Hill) provides the only area of significantly higher ‘tsunami safe’ ground immediately north of the city centre, to a maximum elevation over 100 metres above sea level. The topography of Napier provides few options for evacuating to high ground and the current building stock comprises mostly one- and two-storey 1930s buildings built following the 1931 earthquake. The small number of tall buildings means that vertical evacuation for large numbers of people is currently untenable. As high ground provides safety from tsunami (Stewart et al., 2005), Napier Hill will be the primary evacuation destination for city based residents and workers in the CBD given the distance to safety inland.

## 2.1. Research focus

Current best practice in disaster response and emergency planning emphasises building community resilience and proactive planning to support preparedness and mitigate disaster impacts (Becker et al., 2013; Blake et al., 2018; Brown et al., 2019; Johnston et al., 2013; Paton, 2019). An important aspect of enabling at-risk communities to be prepared and mitigate the potential impacts of tsunami is to better understand the complex dynamics of evacuation.

Previous engagement with community preparedness has focused on the capacity for residents to look after themselves, as well as support loved ones and neighbours (Becker

et al., 2013). While we know that communities do help strangers in emergencies (Twigg and Mosel, 2017), there is a gap in response planning for people opening their homes as part of community resilience plans. It is often assumed in emergency management planning that this will occur. However, the dynamics and complexity of this expectation are not fully understood, and this expectation places a major onus on recipients of evacuees to provide resources and support in stressful situations.

Overall, extensive literature on evacuation behaviour provides a basis for tsunami evacuation planning (see: Fraser, Leonard and Johnston, 2013). However, to date this literature has focused on understanding the behaviours of evacuees and triggers to evacuate. No research has sought to understand the perspectives of residents in safe locations who would be faced with providing support and hosting evacuees following a major tsunami event.

This research for Hawkes Bay Regional Council CDEM provided insight into these issues by investigating the opinions of Napier Hill residents, who are likely to experience an influx of earthquake and tsunami evacuees from other parts of Napier following a major event, and may need to provide these people support.

### **3. METHOD**

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The methodology for this research focused on the local population of Napier Hill, involving three focus groups and a public survey to better understand community perspectives and expectations related to evacuation to Napier Hill. Napier City Council and Hawke's Bay CDEM advertised the focus groups to hill residents through their networks. While the focus was primarily on residents we also extended the invitation to those who spent a lot of time on the hill and may have to respond to evacuees (workers, schools, etc.). Interest in the research was significant and the uptake of participants for the three focus groups was rapid. People were interested to know more about the issue and contribute to the research.

Researchers from the Joint Centre for Disaster Research at Massey University and GNS Science facilitated three focus group discussions at Napier Central School, with one on Sunday 21 July 2019 (3:00pm, 17 participants) and two on Monday 22 July (10:00am, 12 participants; 5:30pm, 10 participants). For each focus group session participants were also split into several smaller groupings to aid effective conversation (i.e. into three groups on 21 July and two groups for the sessions on 22 July). At least one representative from Hawke's Bay CDEM and Napier City Council was present at each focus group to answer complex or locally nuanced questions. Each focus group ran for 1.5 hours to a scenario-based outline with semi-structured questions, provided as Appendix 1 and developed through engagement with Hawkes Bay CDEM and East

Coast Life at the Boundary (ECLAB) to ensure the scenario's accuracy to a modeled event.

The researchers recorded each of the focus group discussions. This allowed the information to be rechecked for accuracy. However, as per Massey University's ethical code, the digital recordings were kept securely at Massey University and all participant information and responses have remained anonymous in analysis and reporting.

To conclude each focus group, the researchers informed each participant of the survey link that they would receive in a follow up email, and we requested that they engaged with other people on Napier Hill (for example, neighbours and friends) and asked them to complete the brief survey. In total, 68 people completed the survey, which enabled slightly more insight from a wider number of people. Surveys were variably completed, and some people did not answer all of the questions.

The data from the focus groups and the survey was analysed qualitatively using thematic analysis, which is a common method used to analyse qualitative data in social science research. Collated data has been summarised and is discussed in the following sections. The findings will directly inform Napier City Council and Hawke's Bay CDEM Group's planning for future readiness and response. It will also provide valuable insights for evacuation planning across New Zealand, especially where large numbers of people need to evacuate to safety in major events.

## **SUMMARY OF FINDINGS**

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A summary of key themes identified in the analysis of focus group and survey data is provided as Appendix 2. In addition, the survey data are included as supplementary material (refer to Appendix 3). The follow-up quantitative data generally supported the findings from focus group discussions. However, there was a noted dynamic in terms of the broadness of community outlook and the negotiation/tempering of perspectives within focus groups and survey responses. The researchers noted that participants came together to discuss issues in a co-operative way in focus groups, which tended to emphasise community at a broader scale, whereas participants' responding to survey questions independently appeared to elicit narrower and often family or self-focused responses. In our summary of findings we focus on presenting information from the focus groups themselves.

#### 4.1. Summary observations

A series of summary observations are outlined to provide an overview of the issues discussed frequently across all focus groups, as follows:

1. Participants highlighted key concerns with initial evacuations, for example people not knowing what route to evacuate up, people stopping in the wrong places, getting stuck in cul-de-sacs, and not knowing where to muster. Also, residents frequently questioned whether existing steps and access ways up the hill would remain intact following an event of the scale outlined within the scenario.
2. Many participants identified that using cars to evacuate from low-lying parts of Napier is a key issue due to major space constraints and limited time to evacuate. However, several participants stated that they would use their car to evacuate.
3. People generally support hosting evacuees and offering assistance if they are in a position to be able to, which is consistent with billeting experiences following the Christchurch earthquake (Burton et al., 2015). However, there were some key issues identified, such as:
  - a. What if friend/s or family turned up and needed support. How should accommodation/support be prioritised and allocated?
  - b. Concerns over hosting certain demographics (for example, some residents were fearful of patched gang members).
  - c. People thought there might be different levels of “hosting”, e.g. people might stay in a room/bed in a house, or if there were no spaces left in house, in tents, or under trees.
  - d. In terms of length of time, people often suggested that they would be happy to host evacuees, “As long as possible”, but then on thinking about it more often adjusted to, “As long as we have resources”.
4. Key issues that were raised during focus group discussions included:
  - a. Co-ordination and the need to register evacuees.
  - b. Meeting health needs, from initial first aid through to on-going support of injured people.
  - c. How to manage casualties, as well as severely injured and dying people.
  - d. Social and psychological support and management of shock.
  - e. Survival needs: water (also some people suggesting to drink swimming pool water), sanitation, food resources, medications, resources for babies.
  - f. Vulnerable populations (elderly, children, those less able to prepare beforehand).
  - g. Aggressive/angry evacuees (stemming from being stressed out).
  - h. Looting.
  - i. Gas leaks/fires.

5. Issues related to information and communication, including:
  - a. How to reconnect separated families.
  - b. How to co-ordinate the local response, without access to cell phone network.
6. Prior planning was seen as a priority, including:
  - a. Evacuation plans
  - b. CDEM response/recovery plans, with some facilitation by CDEM (We also noted there were still some beliefs that there are formal evacuation centres, and CDEM will be helping on the day, as well as expectations of a national response).
  - c. Community plans ('hubs',<sup>3</sup> resources, places to store resources, etc.).
  - d. Knowing skills in your community.
  - e. Community leadership essential.
  - f. Training for community members.
7. Maps were used to identify useful gathering spots or resource storage spots:
  - a. Includes schools, public and private spaces.

These key issues are addressed in more detail with participant insight in the following sections.

## 4.2. Response timeframes

Figure 4 provides a high-level overview of participant concerns in relation to key time intervals across an estimated three-week response and/or recovery period following an earthquake and tsunami event. It is important to note that these timeframes were extracted from analysing focus group discussions, identifying key pressure points as participants adjusted their thinking with regard to how they would react, and what different priorities would be in a major event situation.

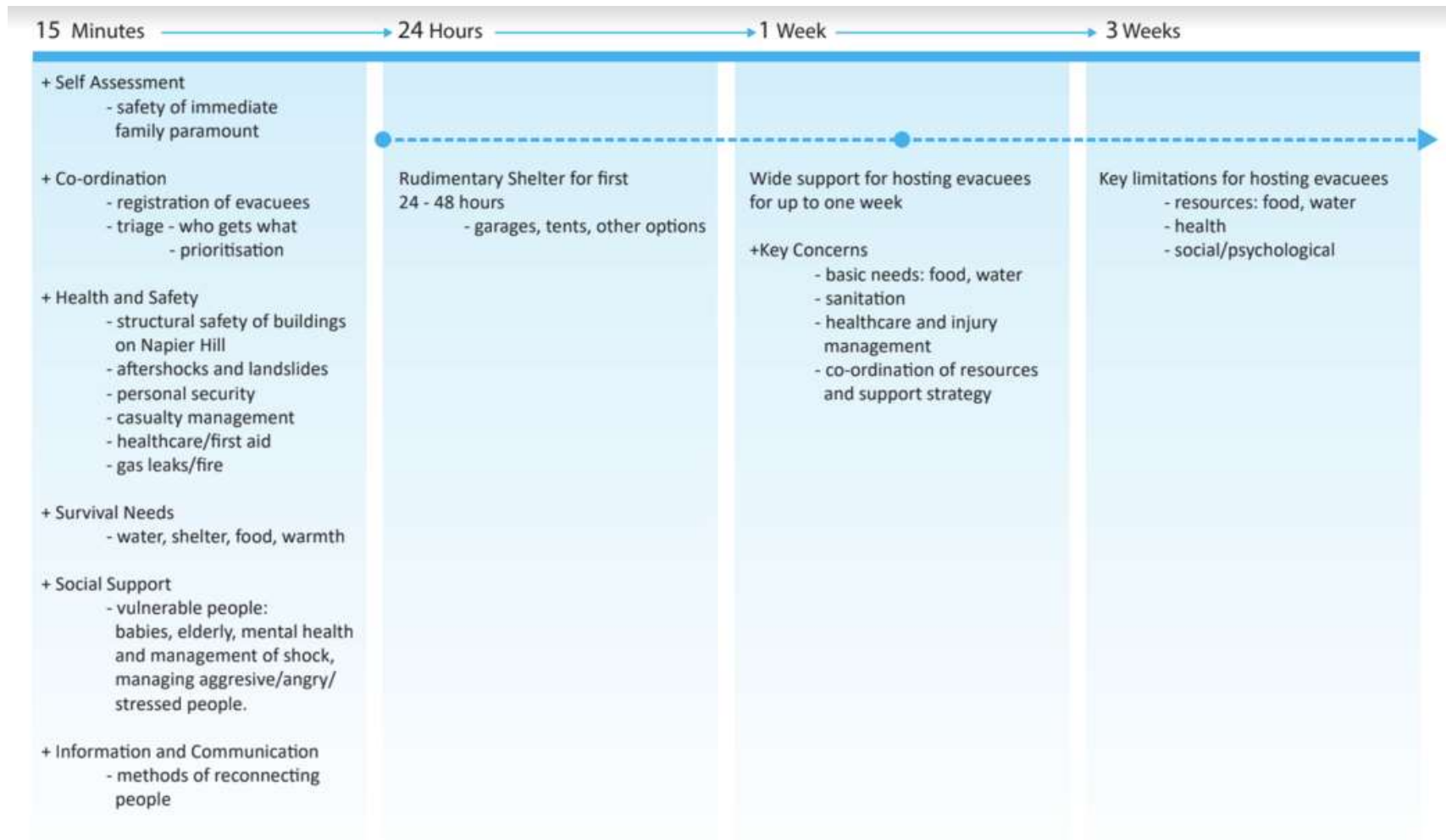
Importantly, within 12 to 48 hours following the event there was a recognised need for a major and co-ordinated community response. During this time wide-ranging issues and stressful situations would likely be confronted, and participants perceived the need for significant pre-planning and investment in educating and familiarising residents with what to do. Following the initial 48 hours, resident concerns focused primarily on how to support the basic needs of themselves and evacuees, and how this on-going response and/or recovery would be resourced and co-ordinated.

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<sup>3</sup> The term community 'hubs' was introduced by researchers to the focus groups in a general sense. People were asked to indicate 'hubs' where people might gather, coordinate activities, and support each other following an event. Refer to commentary on the use of the term hub in Section 4.5 below, and see Appendix 1 for the question used on this topic.

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**Figure 4.** Initial response timeframes and correlated critical needs identified in focus group discussions.

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### 4.3. Response timeframe 1 (15 minutes to 24 hours following event)

Initially following the earthquake (15 minutes to 24 hours following), the concerns of residents were empathetic and focused on the general wellbeing, health and safety of themselves, their families and incoming evacuees.

Many residents stated the need to provide evacuees with first aid, fresh water, basic survival items and shelter (especially depending on weather conditions or the time of day and season), an issue highlighted in a recent report on *Rapid Disaster Relief* (Hawke's Bay Civil Defence Emergency Management Group, 2019). In addition, across all three focus groups several participants identified the need for a pre-planned and coordinated approach to registering evacuees, so there is an understanding of who evacuees are and where they would be located on Napier Hill. This could also act as a basic communication system for reconnecting separated families and loved ones.

There was wide recognition of the need to pool resources as a community of hill residents and come together to support evacuees, as the following quotes illustrate as examples:

#### Quote 1

[We could] offer shelter and assistance. To quantify volume may be difficult, but potentially 20 or so at our home ... Air mattresses, blankets, some basic first aid equipment, I am a registered nurse so would offer first aid as required. Working collaboratively with neighbours would also be key to pooling resources to assist high volumes of people.

#### Quote 2

First I would check on our elderly neighbour who lives alone. I would then invite the evacuees into our house, make them a hot drink, and check if they need any medical attention and use our first aid kit if necessary. I would contact neighbours and see if we could pool resources to help each other to help those who have raced up here [to Napier Hill]. My first thought would be to make them feel safe, calm them down... warm clothes if they need them.

#### Quote 3

I would get people to contact their families to let them know they are safe. I would prioritise those who are injured and find someone who has medical knowledge and or supplies. I would gauge who may be short of warm clothing.

#### Quote 4

Inviting them [evacuees] inside where warmer and offering warm clothes, food and bedding where possible. Sounds simple... I think the whole situation would be so terrible, scared, injured, sick people, missing their people [sic.], ground still shaking, tsunami fear, freezing cold ... unthinkable really but a serious possibility, I think about it most days.

As highlighted in quotes 2 and 3 above, some residents continued to believe that basic amenities such as telephone connections, water supply and the ability to make a hot

drink for evacuees would be retained. This is unlikely following a major event like the magnitude 8.9 earthquake the scenario was based on.

Quote 4 provides insight from a participant who along with many others was deeply concerned about the scenario presented in the focus groups. Other participants were scared of the event occurring but many remained uncertain about practical ways of preparing, especially if there is the expectation to support much larger numbers of people as well as their immediate families. There was considerable variance however, and some participants were more laissez faire about an event occurring, and had not fully gauged the scale of impact that could arise from an event related to the Hikurangi subduction zone. Focus group facilitators regularly provided scale indicators so that residents could more fully engage with the scale of what they might confront in an event such as that presented in the scenario.

Overall, it was clear that the majority of focus group participants and survey respondents would be willing to provide shelter and support evacuees within the limits of their resources. For example, elderly retirees and pensioners who attended the focus groups often stated concerns for their personal safety and felt that what they could offer to others was constrained by the limited stores they could afford or had room to keep in their homes.

In other examples participants were focused on supporting their family unit, and they saw it as a government and military responsibility to provide wider support, as the following quote demonstrates.

Quote 5

I would be willing to help the frail and injured of course. However, we have only stored emergency supplies for our immediate family and while we would share to a degree, I would ultimately be putting our family first. I do not believe that in the scenario described, 'proper access' to the Hill will be restored in 3 days, nor do I believe that there will be any place for evacuees to go for 24 hours – except perhaps one of the 3 schools on the hill. It is my expectation that central government and the military will provide emergency relief in the form of food, water and emergency supplies.

What the above perspective highlights is that there is not a shared or agreed to expectation across the Napier Hill community for hosting or providing support to evacuees following a major event. Hence, a response would currently be ad hoc and supporting evacuees would rely on recipient generosity and available resources, rather than a planned, agreed to and well-resourced response strategy. Consequently, if it is expected that evacuees will be hosted and provided resources by residents on Napier Hill, adequate investment of time and resources is required to obtain wider community buy-in and enhance the preparedness levels of hill residents.

Additionally, the participant above was not alone in considering that supporting evacuees and providing emergency relief should be a central government and military responsibility. However, in events such as the Canterbury and Kaikōura earthquake sequences, the military/government response was rapid and effective at providing support to these regions largely because the events were relatively localized. The potential scale of an event caused by rupture of the Hikurangi subduction zone is likely to significantly impact Wellington and many other East Coast localities. Government and armed force response capacity would quickly come under pressure and would unlikely be able to rapidly meet the needs of all regions and individuals. Consequently, overall emergency planning emphasis needs to remain focused on improving local preparedness and resilience that enables people to take care of their own needs when assistance is not immediate.

#### **4.4. Response timeframes 2 and 3 (24 hours to 1 week, 1 week to 3 weeks following event)**

Following the first 48 hours residents remained very supportive of hosting evacuees. Many identified how stressful the initial period would likely be (as per Burton et al., 2015), especially dealing with casualties and loss. However, participants commonly used examples from Christchurch and Hurunui/Kaikōura earthquake responses to highlight how communities often come together in crisis periods to support vulnerable people.

In terms of hosting evacuees over longer time periods, residents were concerned about how they would support the basic needs of themselves alongside evacuees with current levels of preparedness. In focus group discussions, most residents considered that they could host varying numbers of evacuees in a basic way for between three days and up to one week, but if this period were extended to three weeks there would be major challenges.

As shown in Figure 4, the key concerns of residents with regard to hosting evacuees over extended timeframes were focused on:

- Providing basic needs:
  - Secure and safe water supply
  - Basic food items
  - Provision of shelter
  - Ensuring sanitation.
- Healthcare and injury management, including a strategy for how to deal with serious injuries and dying people.

- Social-psychological support, bearing in mind that while out of the direct threat from tsunami, the personal situation of Napier Hill residents will vary markedly, and hence expecting impacted residents to provide longer-term support to others is a significant imposition and therefore must be flexible.
- Ensuring a co-ordinated strategy; it was considered a major task to co-ordinate people and limited resources.

#### **4.5. Mobilising local and community based planning**

Effective planning prior to an event was considered to be a key priority across all focus groups. This planning was perceived as needing to occur at multiple levels, from personal planning such as having a family evacuation plan and investing in preparedness, through to community-based planning and running drills to co-ordinate a response and up skill.

In terms of providing for more effective evacuation planning and developing a strategy that is bought into by local residents, many focus group participants emphasised the role that already established neighbourhood support groups could play.

Many participants were linked to local community support and Neighbourhood Support groups, and some noted these groups were starting to dwindle and were under-resourced on Napier Hill. However, several participants drew from experiences in Christchurch and emphasised the importance of neighbourhood support groups in responding to the 2011 Christchurch earthquake. Overall, there was a view that this type of localised community leadership and planning should be invested in and should be empowered by CDEM. Developing community based event response and evacuee support strategies with Napier City Council and Hawke's Bay CDEM could provide a revitalised focus for neighbourhood support groups.

A range of benefits to empowering these groups were identified by participants, including:

- Community leadership is essential and local leaders generally know their communities better than employees in external agencies.
- Local groups make it easy to identify important skillsets in the community. For example, several doctors and other healthcare professionals live on Napier Hill, and they are likely to be relied on in an event.

- Grassroots strategies are usually more readily bought into and supported locally, compared to strategies that are ‘proposed or imposed’ by outside agencies, which are often resisted.
- There is the potential to train community members in a way that builds capacity to share responsibilities when an event occurs. Decentralisation spreads the workload, but there would need to be trust built between CDEM, NCC and local groups, as well as checks and balances put in place with pre-planning.
- Decentralising some NCC and CDEM responsibilities in a way that enables community leaders to buy-in and focus on achieving change at a street-to-street level was perceived as beneficial. Participants considered that enabling localised response planning and relationship building would achieve more resilient outcomes that are less influenced by the fluctuating capacity of local agencies such as Hawke’s Bay CDEM.
- Could focus on developing community ‘hubs’, and work through some of the key challenges in response and recovery plans at a grassroots level, with the support and knowledge of NCC and local CDEM.
- Empowering groups of local people helps to facilitate buy-in and also dispel mistruths within the community. For example, some participants believed that formal evacuation centres would be set up by CDEM, and the government would intervene rapidly, which suggests that decentralisation of emergency preparedness and local capacity development remains limited.

Referring to the fifth and sixth bullet points listed above, the decentralisation of CDEM responsibilities and the recognised need to ‘share the workload’ in an event were themes regularly discussed by focus group participants. In particular, although the terminology and concept of a community ‘hub’ is not currently used in material produced by key agencies in the Hawke’s Bay, focus group participants discussed this concept (which was introduced by the researchers in a generic sense; see Footnote 2 earlier) frequently. In several examples, participants suggested that already existing Neighbourhood Support groups could be activated with a focus on becoming ‘CDEM response groups/hubs’. Such participants considered that CDEM responsibilities would provide Neighbourhood Support groups with a revitalised and important focus, while also providing a mechanism for decentralising disaster preplanning, even response co-ordination and support achieving local buy-in. Several participants emphasised the key role that Neighbourhood Support groups played in responding to the Christchurch event, with one participant involved in coordinating this response. Given that some neighbourhood support groups on Napier Hill are currently more active than others, using the focus of planning for a Hikurangi subduction zone event may re-invigorate these groups. Additionally, another approach might be to find out what other issues are salient to these groups (Kwok et al., 2018), and start with discussions around these issues before introducing an earthquake and tsunami planning element.

A particular example of a grassroots activity occurring beyond the view of local agencies was embedded in one neighbourhood support group, and is provided as a case study in Box 1 below.

**Box 1: Case Study - Developing a Disaster Response ‘Field Hospital’**

A participant in the second focus group and her husband were involved with coordinating the tsunami response at Koh Phi Phi, Thailand, following the 2004 Boxing Day event. This experience opened their eyes to how dire the aftermath of a significant tsunami could be, and alerted them to how a response requires a pre-planned and ‘ready to go’ approach prior to an event, otherwise you remain on a back foot and more people suffer.

Returning to Napier following this experience, the couple sought to get something underway. Several of their neighbours are doctors, and a key issue in Thailand was a lack of readily available medical supplies. As a result, the couple and their neighbours are currently working to develop the infrastructure for a well-resourced field hospital in their street on Napier Hill, which will be set up following an event. This includes gathering and storing large canvas tents and a well-inventoried list of drugs and medical supplies for emergency use.

#### **4.6. Strategic locations**

The final component of each focus group involved a mapping exercise. Three large maps of Napier Hill were laid out on each of the tables and participants were asked:

1. Where are the key places evacuees might gather?
2. Where would be the best places to set up community hubs/support centres in an event response?
3. Would these locations be required for other uses?
4. Where would you locate emergency response supplies?

Discussion at times diverged to identifying key evacuation routes and paths from the city to Napier Hill, and many residents were concerned about how dependable these routes were. However, participants identified a range of key locations on the hill that could suit their aforementioned needs, as follows.

Locations where evacuees might gather and potential challenges:

- Botanical gardens (people sheltered under trees here in 1931).
- Old hospital site. Many people would evacuate up to the old hospital site of Napier Hill.



- There are three schools on Napier Hill, but these spaces will likely be competed for/ in demand. Schools are effective places to set up as CDEM centres, field hospitals and for shelter. However, participants noted that some lowland schools have reciprocal arrangements to evacuate students and staff to hill schools.<sup>4</sup> The point was also raised, however, that if an event happens during school hours, schools will be fully focused on looking after their students and staff, and not able to perhaps receive or support evacuees. Some of these arrangements thus require further discussion.
- Bluff Hill lookout provides open space that is well out of the tsunami zone, but the area was considered likely to slip.
- People would come up stairs and main access roads to Napier Hill, but there are few places to wait or congregate, especially if this meant blocking the way for others. It is also likely that landslides and earthquake damage could have destroyed access ways and stairs.
- The old Napier prison/backpackers may be out of tsunami zone and could be used to shelter. Damage and aftershocks could be an issue.
- Hinepare, the former hospital Nurses' Home, is boarded up and assessed as earthquake prone, but could offer a place to shelter or to set up tents in.
- Other spaces identified included: the warehouse at 36 Faraday Street, Sturms Gully, bowling club, and the local church.
- Where do you send people if they are injured? Unsure where this would be on the hill. Possibly set up in the Botanic Gardens (parts of the gardens are relatively flat).
- Enfield Rd area (southern end), is a complicated area. Roads up and down, cliffs and a reservoir that might collapse.
- Princess Alexandra houses a vulnerable population of elderly, as well as Port School and Lollipops day-care (children). There is strategy needed for attending to these vulnerable populations, for example, one participant suggested that traffic management is required to stop vehicles so people can evacuate safely.
- People will gather on main roads and footpaths, but will be anxious of falling objects.
- People on the lower reaches of the hill will evacuate more quickly, whereas those further away will arrive later. Therefore, space may be limited depending on how many people evacuate.

#### Places to set up 'hubs' and store resources:

- All supermarkets are located on flat areas in the tsunami zone, so there is no bulk food storage on the hill. There is only one dairy, with limited stock.
- Will civil defence nominate places to locate response centres? Schools could be medical centres.
- The existing church was identified as a good location for storage of response resources and/or setting up a hub.

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<sup>4</sup> A number of participants stated concerns about schools and vulnerable places like rest homes. A number asked whether they have plans, and if these plans are consistent and well understood (e.g. across schools, etc.). It was considered that there is not enough information provided from schools to parents about procedures, exercises and outcomes from those exercises (like whether there's enough time to evacuate), and participants were not satisfied that the evacuation could be done in time.

- Could you ask people with a bit of land to put on a shed and resources inside (e.g. church land) that people could access (access is important)?
- Rain tanks located in specific areas.
- Reservoir – good place to store items (medical supplies, tents).
- There need to be enough “hubs” as up to 15,000 people could be spread all over the hills.

In summary, the mapping exercise was valuable to engage residents and local knowledge was useful to identify key sites, but more time and active engagement with community members is required to develop an accurate understanding of valuable locations and a strategy for using these locations both pre- and post-disaster. It is noted however, that open space for gathering evacuees and vacant sites for storing supplies are relatively limited. Therefore, detailed prior planning is required to work strategically and methodically through key co-ordination issues.

## 5. DISCUSSION

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The following gaps, requiring additional investigation by Napier City Council and Hawke’s Bay CDEM, were identified in the focus group and survey data.

### 5.1. Clarify the needs of evacuees versus existing capacities on Napier Hill

The focus groups helped identify many of the impacts that may be experienced following evacuation after a long or strong earthquake, and the variety of needs there may be for evacuees and residents. These perceived impacts and needs are supported by responses in the survey data (Appendix 3). However, further analysis is required to more fully understand the implications of such an event in terms of impacts, people’s needs in light of those impacts, agencies’ potential responses, resources required to assist agencies’ responses, and how preparedness and planning can help. Further quantification of impacts and needs, and identification of the gaps between these would help inform future risk reduction and improve readiness to respond.

### 5.2. Continue to pursue education and engagement initiatives

There were many discussions that highlighted the need for continued education and engagement about earthquake and tsunami risk and how to respond. The following paragraphs discuss some of the sub-themes that arose.

#### 5.2.1. Clarify and better communicate evacuation procedures

Participants were concerned about a lack of clarity regarding evacuation procedures, and highlighted a range of potential strategies. For example, a common point of discussion was the ‘blue line’ tsunami zone strategy recently implemented in tsunami risk areas in Wellington. It was highlighted that while evacuating to 30 metres elevation

is often stated, under stress it would be difficult to know where this is. Hence, it would be useful to outline evacuation zones in tangible ways that familiarise people on a daily basis to recognise that “you’re fine if you come to here”.

Prior to, and then initially following an event, signage was seen as useful to direct evacuees, and could be organised by communities. Simple signage identifying evacuation routes and muster points would be useful, and could also provide a route-based framework for community exercises/tsunami hīkoi, for example as part of the ‘ShakeOut Drill’. Additionally, people could assist on the day of an earthquake/tsunami by personally directing people to safe zones. It was noted that there are a lot of steps and access ways onto Napier Hill, but only locals know about them, and therefore they need to be more publicised and potentially developed into a map system. One participant even suggested that this could be part of a Napier based evacuation phone application, which could be developed and downloaded to provide up to date information and alerts, especially with regard to evacuation routes.

As a mode of communication, a system should be developed that identifies which Napier Hill households are willing to host evacuees following an event. Two suggestions were made during focus groups: 1. a green (yes to evacuees), orange (yes to evacuees, but only limited assistance available), red (no evacuees) system such as that being investigated in Christchurch (e.g. using the existing rubbish bin system, whereby people put out specific-coloured rubbish bins to advertise their ability to provide support, or not); and, 2. visible signage on letter boxes or windows identifying receptiveness to evacuees.

#### **5.2.2. Develop, clarify, agree to and communicate shared expectations for Napier Hill residents to host and support tsunami evacuees**

A clear strategy and set of expectations with regard to hosting tsunami evacuees is required. This could be achieved through active engagement between agencies and communities, to work together to understand needs and expectations, and set goals over time. This would also have the added bonus of building relationships and connectedness, both essential elements in an effective response (Aldrich and Meyer, 2015). Community meetings could provide a useful forum for enabling the ‘meeting of minds’ and to continue conversations started by the focus groups in a way that achieves clarity of expectations and outlines practical ways of moving forward in a manner that brings the community into decision-making. There may also be other useful mechanisms for developing shared expectations, which could be developed via relationships. For example, it was suggested that closer connections between the school and residents (without school-aged children) might assist with planning for and responding to such an event.

All stakeholders need to have an equally vested interest to ensure that residents do not feel that it is being left entirely to them in an event, and it should be a core objective of Hawke’s Bay CDEM to enable and support grassroots strategies, such as the efforts going into developing the field hospital (refer to Box 1).

### **5.2.3. Set up neighbourhood or street-based ‘groups’ to assist before and after an event**

As stated above, empowering local leadership is critical to the success of a response strategy. Following the focus groups, many residents felt committed to support the improvement of preparedness on the hill and wanted to enhance the capacity to support evacuees. Activating some kind of ‘group’ was suggested as a way of getting momentum with regard to localised planning. It was suggested these could possibly operate as part of an existing neighbourhood support network.

For example, a specific ‘group’ could define key roles and allocate planning tasks accordingly, and alongside CDEM partners, groups could be allocated an area of open space as a post-tsunami mustering point and a storage location. The range of people in a ‘group’ will bring a diverse set of skills. They could begin with developing a list of skills required in a response and investigate training options (e.g. response co-ordination, first aid).

### **5.2.4. Continued involvement in participation in community exercises and drills**

Once expectations are clarified, people need to be familiarised with how an event might play out. The annual ShakeOut earthquake drill and Tsunami hīkoi seek to achieve this, but local agencies in the Hawke’s Bay should continue to employ localised approaches that fit with local issues. Exercising with drills is a key mode of developing local capacity and ensuring that communities know what to do when an event happens.

### **5.2.5. Provide ‘tangible engagement’**

Hawkes Bay CDEM and Napier City Council could clarify what residents might confront and the resources they may have to rely on in an event, in order to trigger better preparedness. It is suggested that presenting scenarios and scale-based impact information, such as that being done for the Hikurangi subduction event, could be useful. It is important to present this information in a way that highlights potential impacts, and outlines practical ways for residents to not be reliant on common amenities that are unlikely to be functional after a major event. While some might function, it is important to have a ‘Plan B’, and offer practical solutions without creating additional fear, which can create apathy with people withdrawing to ‘bury their heads in the sand’.

## **5.3. Economic incentives**

A common topic of conversation suggested that in order to achieve buy-in, economic incentives could be provided. For example, rates rebates and subsidies could be provided for people who purchase preparedness supplies to support evacuees, or contribute to the overall ability of the hill to support evacuees.

#### **5.4. Develop strategies for providing basic needs**

Providing for basic needs was a key concern for most residents, as follows:

- Ensuring fresh water supply is a major concern, and various participants were interested in supplementary rainwater tanks, or other ways to ensure their self-sufficiency.
- It was considered important to develop storage options for food, water and medical supplies on the hill.
- A wide range of options for providing shelter to evacuees was identified. It was considered that people generally only need basic shelter out of rain and cold wind. One participant identified the potential to collect and store the many tents abandoned after the Rhythm and Vines New Year's festival in Gisborne.

### **6. ACKNOWLEDGEMENTS**

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For this project we would like to acknowledge funding from the Hawke's Bay Civil Defence Emergency Management group, East Coast Life at the Boundary (ECLAB) and Kia manawaroa – Ngā Ākina o Te Ao Tūroa Resilience to Nature's Challenge National Science Challenge. We would also like to thank Napier City Council and Hawke's Bay Civil Defence Emergency Management group for providing personnel and resources to assist with the research. Finally, a big acknowledgement goes to the focus group and survey participants themselves – your input will assist in helping us become better prepared for future emergencies. This project followed Massey University's code of ethical conduct (Ethics Notification Number: 4000021400) and has been peer reviewed by two independent experts.

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## APPENDIX 1. FOCUS GROUP SCENARIO AND QUESTIONS

<b>Introductions</b> 15 Min <i>Full group discussion</i>	<p>Introduction of facilitators, emergency procedures, toilets etc.</p> <p>Introduction about the project / focus group format / rights.</p> <p>Quick introductions from participants.</p> <p>1. Who are you?</p> <p>2. What is your interest in this project?</p>
<b>Setting the scene</b> 6 Minutes	<p>3. Public awareness video (4 minutes) for ‘warm up’.</p>
<b>Scenario Begins</b> 1 min	<p>4. Present first part of scenario.</p> <p>It is just after 9am on a winter’s school day. You are at home today. Suddenly it begins to shake, and you immediately drop, cover, hold. The power goes out. The shaking is extreme, there is a lot of noise. Things fall from shelves and unsecured furniture topples over. The shaking continues for over a minute – it is terrifying. After what feels like forever the shaking subsides. Fortunately, everyone at home is unscathed but shaken up.</p> <p>You start to take stock and check your neighbours. Your home is a mess with some damage but seems to be structurally ok and safe to stay in. There is no power, running water, sewerage or phone services available. You can see some properties have experienced more damage than yours and don’t look habitable. Some properties have shifted off their foundations. There are landslides affecting properties and access.</p>
<b>Group Discussion</b> 5 mins	<p><b>Key Questions</b></p> <p><i>Q1. What is going through your mind as a Napier Hill resident?</i></p> <p><i>Q2. What are your priorities at this point?</i></p>
<b>Scenario continues</b> 1 min	<p>5. Present second part of scenario</p> <p>After a few minutes people start arriving on foot and congregating. They are mostly from the CBD and Ahuriri who have evacuated after the shaking stopped to higher ground. They know that strong shaking is a natural warning that a tsunami could occur. Some school groups start to arrive. The children are particularly upset. Evacuees report significant building damage in the CBD and widespread liquefaction (explain further verbally if people need a definition).</p> <p>Twenty minutes after the earthquake there are hundreds and hundreds of people on the hill. Scared, some have back packs with essentials but mostly people only have the clothes on their backs. Some have injuries. Some have pets. Many are separated from loved ones.</p> <p>Soon afterwards, the first tsunami wave arrives. You know that waves can continue for several hours and start to understand that it’s unlikely there is anywhere for evacuees to go for the next 24 hours.</p>
<b>Group Discussion</b> 10 mins	<p><b>Key Questions</b></p> <p><i>Q3. How would you respond initially to evacuating people arriving?</i></p>



	<i>Q4. What are your main concerns and priorities? (ques – personal safety? The upset people? Further shaking?)</i>
<b>Scenario concludes</b> 1 min	<p>6. Present final part of scenario</p> <p>It is the next morning. Stories continue to emerge about the devastation caused by the earthquake and tsunami. The power, phone and water networks are still out. Continuing large aftershocks cause further damage and disruption.</p> <p>Messaging over the radio advises that we are in a state of national emergency and there has been widespread damage throughout New Zealand. Hawke's Bay residents are urged look after themselves and neighbours. There are large numbers of people displaced across the region, some are without shelter at night and there is not enough food and clean water to nourish everyone. The Hawke's Bay is isolated by road and will continue to be for at least a week. Napier Port has been badly damaged, it is unknown how long it will take to re-open it, and Hawke's Bay airport is permanently closed. Civil Defence are coordinating critical drops of supplies and may have some capability to airlift those with critical or life-threatening medical issues off the hill. Access to support the hill properly is likely to take at least 3 days to restore.</p> <p>You now have the sense that it will be at best days if not weeks before the situation significantly improves.</p>
<b>Group Discussion</b> 30 mins	<p><b>Key Questions</b></p> <p><i>Q5. What practical ways could you consider supporting evacuees?</i></p> <p><i>Q6. Would you consider hosting displaced people in your home?</i></p> <p><i>Q7. What are your concerns and issues with doing this?</i></p> <p><i>(ques: stressed people? Angry? Different demographics?)</i></p> <p><i>Q8. How long would you be willing to support evacuees for? (including hosting as one aspect)</i></p> <p><i>(ques: timeframes? Adequate resources to support more people?)</i></p> <p><i>Q9. Can you think about what might be required to host and support evacuees?</i></p> <p><i>Q10. How would hosting evacuees impact on your personal situation or that of your family?</i></p>
	<b>5 minute break</b>
<b>Mapping Exercise</b>  20mins	<p>7. Mapping Exercise</p> <p>Looking at the map provided:</p> <p>Prompts:</p> <p><i>Where are the key places where evacuees might gather?</i></p> <p><i>Where would be the best places to set up community hubs/support centers in an event response?</i></p> <p><i>Would these locations be required for other uses?</i></p> <p><i>Where would you locate emergency response supplies?</i></p>

<b>Final questions and wrap up</b> 10 min	<p>8. Do you have any other information that you would like to share regarding the scenario we have presented?</p> <p>The findings of this research project will help us plan other activities that help increase preparedness and community resilience on the Napier Hill. However, it is crucial that you - as residents of the hill be involved in making this happen.</p> <p>If you are interested in being involved in other activities planned to do this work, please sign up on this sheet that I am passing around now, so we can keep in touch with you.</p>
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## APPENDIX 2. THEMES FROM THE FOCUS GROUP DATA

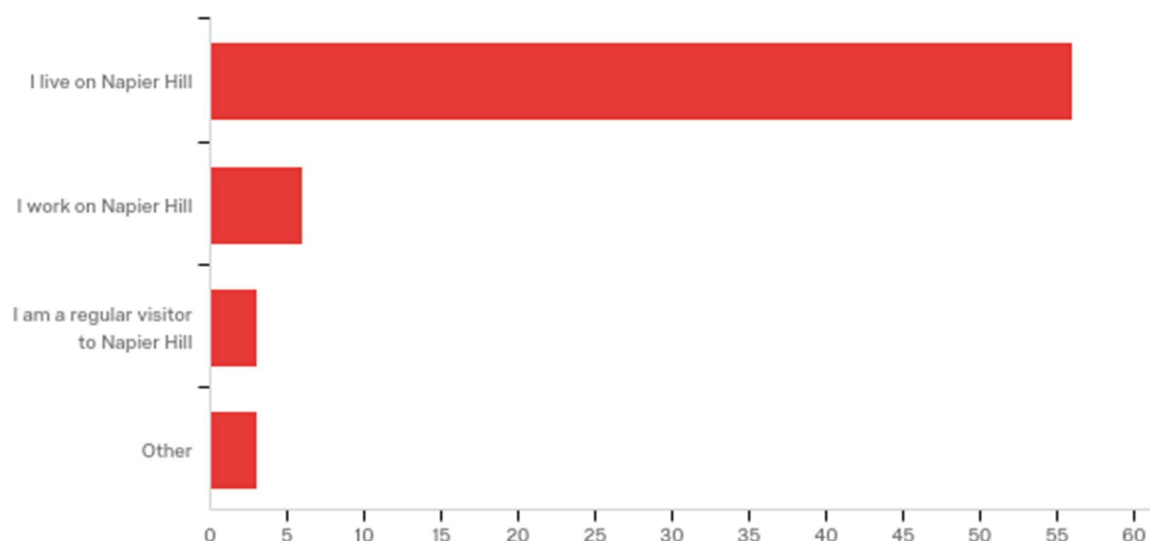
Coding themes	Sub-themes
Co-ordination	Initial strategy (how and where to evacuate, secure evacuation routes).
	Focused local, empower local mobilisation in event (i.e. through community groups).
	Questions regarding the enabling versus controlling role of councils, CDEM, government, military is planning and response. Sometimes communities feel disempowered.
	Registration of evacuees, such as a sign up sheet. Can act as a list of contacts, where people are located on the hill, and how to find them, for tracking down loved ones.
	Someone needs to take charge
Pre-planning (critical)	Define roles, ensure capacity but also slack to allow for the unexpected.
	View community as widely networked.
	Rapidly find out who does what and where resources are located in a major event.
Communication and public education	Clarify expectations regarding how many people residents are expected to host, for how long and therefore, how much extra residents should store.
	Clarify roles and responsibilities in an event.
	Scale of event (in a pragmatic, rather than fear-invoking manner. For example, outlining what the community might face to provide for 'tangible engagement'.
	Education and communication reduces panic
	Practical tools for communications - information boards or billboards with important information on it. Identify meeting points and regular/routine times for community briefings.
	Cellphones over loaded and/or damaged. Conventional communications channels unavailable.
	Red, yellow, green system for identifying which homes welcome evacuees.
	Current reliance on social media (not dependable, such as in Kaikōura, information black hole). Will be difficult to get information, and communicate with others.
	Communicating with parents separated from their children, and vice versa, is a major challenge.
	What strategies have worked elsewhere?

<b>Coding themes</b>	<b>Sub-themes</b>
Timeframes	Clarity – how long to expect / plan for hosting evacuees.
Vulnerable people and groups	Evacuation of rest homes, schools and early childhood centres – very complex.
	Schools – check best practice with current in school guidance. Previous example – Westshore School evacuated to Napier Central School, Napier Central didn't know they were coming, so there was a lot of confusion.
Social and psychological support	Train local residents to manage psychologically stressed people in an event? Some psychologists live on Napier Hill.
	Psychosocial issues increase overtime.
	Drinks stations and chat points to normalise and comfort people.
	Establishing routine early is important. Keep people busy.
Personal safety	Stressed people, potential for anger/violence.
Injury management and healthcare	Assessment and triage of arriving evacuees.
	What resources will be available on the hills?
	Medical supplies and vital medicines (diabetes, heart meds etc.) be stored on the hill.
	Field hospital would be valuable.
Basis needs / survival supplies	Water supply requires planning / strategy.
	Shelter (tents? garages?).
	Food.
	Sanitation .
Community hubs	Who should take control? Neighbourhood groups?
	Where should these be located? How should locations be communicated?
	Schools, libraries, parks and other communal locations really important, but will rapidly become crowded.
	Over reliance of schools (storage, meeting spots after events, shelter in halls).
	Identification and communication of muster points.
Storage points.	Limited locations for storing survival items, food, water, bedding, medicines.
	Potential for purpose built/secure storage points.
	Schools? Parks?
Community leadership	Enhance community buy-in to resilience strategies.
	People knowledge, identification of key people, skill sets and interpersonal strengths.
	Street meetings already happen (neighbourhood watch)

<b>Coding themes</b>	<b>Sub-themes</b>
The role of CDEM	Control/centralisation.
	Role in evacuation process.
	Will people listen to community leaders (not of CDEM authority).
Pre-planning	Extremely valuable.
	Needs to be consistent and well engaged with community groups.
	Reluctance to publicise location of steps, storage points.
	People not in a problem-solving state of mind after an event, so systems need to be put in place.
Government/military	Conversation required regarding national government's role, i.e. resources provision, helicopters, to define what realistic expectations are.
Relocation	How long might it be until people could relocate off the hill/out of the region?
Relationships	Some relationships are not well established i.e.: schools and wider community members, schools and CDEM.
	Neighbourhood watch groups have existing capacity and are networked (some more than others). Should be invested in and resourced better.
	Decentralisation of CDEM responsibilities is important, empower local groups with a set of objectives/remit.
Turn off / isolate services	Prevent gas leaks and fires.
Shelter	Could provide gradation of shelter options from rooms and garages, to tents etc.
	Do friends and family take priority? How do we turn people away?
Enabling preparedness	Rates rebates and subsidies for people who take measures to improve the resilience of the wider community.
Concerns about hosting evacuees	Healthcare and psychological stress.
	'Want to help, so long as I can' – requires flexible, case-by-case approach.
	Looting.
	Violence.
	Lack of resources to support basic needs.
	Sanitation – sewerage issues and solutions.
	Abiding by house roles / having respect.
	Length of time.
	Accepting pets into the home.
	Casualty management – what happens?
	Secure fresh water supply (major issue).

## APPENDIX 3. SURVEY DATA

**Q1. How would you describe your situation within the context of Napier Hill?**  
(Tick all that apply)



Answer	%	Count
I live on Napier Hill	82.35%	56
I work on Napier Hill	8.82%	6
I am a regular visitor to Napier Hill	4.41%	3
Other	4.41%	3
Total	100%	68

**Q1a. If you chose 'other', please specify your situation**

I am on the Committee for Napier Neighbourhood Support and prior to that I was the Field Officer for that NPO. Through the 6 years in that role, I held many Neighbours meetings on the Hill, with Civil Defence being a major part of the meeting.

My daughter attends school on the hill

**Q2. How would you respond initially to people arriving on Napier Hill after evacuating other parts of Napier? (Please specify)**

I would give them shelter of course, fire up the bbq, take water out of the hopefully not cracked pool and provide them with a calming cup of tea and with whatever edible I can find in the house. However, my first priority would be the health and safety of my husband, friends and my two cats. But who knows...
One for all and all for one. Assess for injury. Offer them shelter
Offer shelter and assistance. To quantify volume may be difficult but potentially 20 or so at our home. As well as existing surplus of bedding in the house, camping equipment stored at home would be shared and our flat section could be used to set up shelters. Air mattresses, blankets, some basic first aid equipment. (I am a RN so would offer first aid as required) Working collaboratively with neighbours would also be key to pooling resources to assist high volumes of people.
We would open out home to those most in need of shelter. Offer cups of tea etc. We would not feel able to assist with first aid.
I would be willing to help the frail and injured of course. However, we have only stored emergency supplies for our immediate family and while we would share to a degree, I would be ultimately putting our family first. I do not believe that in the scenario described, "proper access" to the Hill will be restored in 3 days, nor do I believe that there will be any place for evacuees to go for 24 hrs - except perhaps one of the 3 schools on the Hill. It is my expectation that the Central Govt / military will provide emergency relief in the form of food, water and emergency supplies.
First I would check on our elderly neighbour who lives alone. I would then invite the evacuees into our house. Make them a hot drink, check if they need any medical attention and use our first aid kit if necessary. I would contact neighbours and see if we could pool resources and help each other to help those who have raced up here. My first thought would be to make them feel safe, calm them down. Get them warm clothes if they need them. We have several air beds we could blow up. We have some tents we could put up if really desperate
Response will depend to some extent on the weather. Clean water will be a priority. Hot water cylinder will contain some. Offer shelter from elements if house is still standing. Try to allocate space to the most needy, Electricity will be out and gas mains may well have ruptured so heat will have to be from barbecues or fireplaces if they are safe.
Welcome them in the street.
I would get the people to contact their families to let them know that they are safe. I would prioritise those who are injured and find someone who has medical knowledge and or supplies. I would gauge who may be short of warm clothing.
Assist people and feed if possible
Take as many in to provide shelter and first aid. Owning a motor home means I have separate cooking and 100L of water. Plus a portaloos.
I would try and support them as much as possible
Let them come in if our house still standing, I imagine scary and shocking though, try to accommodate as best could. Water would be a problem. I also worry about

gas in the street. I'd also be in a state as my 3 year old goes to kindy in Clive so I would be worried sick if she was ok.
Try to provide immediate help to the injured or disabled.
Initially try to help people by offering shelter (if my house is not damaged) and identifying people requiring first aid attention.
Priority to assist would be injured, elderly and children. We would accommodate as many as possible in our house and garage assuming we can. We intend to have a backup water supply. We will have a freezer full of food, a well-stocked pantry, portable gas cooker, bbq, a portable generator. We are ex-farmers and are used to being isolated for days at a time with no help.
Try to offer shelter. Water and food could be difficult.
Sympathetically.
We would attend to the injured first, and offer shelter to as many as possible, should our property be in a safe condition to do so.
Weather conditions and if there are people are injured would dictate my initial response. I find it difficult to be more specific as another factor would be would the resources the evacuees bring with them. You share, you care and do the best you can.
Hard to say, our house may be destroyed and we are part of the masses. If not we would be looking after friends and family who would come to us as planned. We would also go to Central School which is our local Civil Defence Centre and follow any instructions recommendations from there. Where possible we would be supportive to others but in desperate situations it is every man for himself.
I would offer people to come in for shelter so they have access to a toilet and somewhere to prepare food etc. When it comes to staying the night I would need to ensure all my friends and family that have come up the hill have a bed before extending the offer to others especially those with children. We could make up beds in all rooms if necessary.
Happy to help everyone I can after I've made sure my family is safe.
We would offer whatever interim support we could, be it food, water, medical care, shelter or simply comfort, until outside support could be established.
Once I'd been able to establish that my child was safe I could focus on providing assistance, food and shelter for whoever was in need. Because we live at the top of Havelock steps & that is the evacuation point for Carlyle Kindergarten I would head there to see who needed help.
If food and blow up beds were flown into the evacuation sites - I would go up to see how I could help - I could house up to four people.
Happy to house people - assuming our Villa is habitable.
We would assume that although the hill would be isolated there would be at worst the opportunity for helicopter drops of food and water and to be able to winch injured people off the hill. Quite probably helicopters could land bringing supplies (food and shelter) and take some people off the hill. We would be likely to know some of the people and those we would invite into our house. Those we didn't know we would be happy for them to use our section if necessary for camping.
I have no idea how I'd respond. I'd like to think I would do something to help but truth is, I would be anxious with so many people around.



Ask them if there's anything you can do for them see what they may need provide any assistance I can.
I would offer help/shelter/blankets as long as it doesn't affect my family.
Talk to people and try to keep them calm, make lists of names and try to reunite people with families if possible and make sure children re save and calm. Try to set up food banks with the food and water available and look at hygiene options and medical options. Also try to setup a communication line with outside world.
We have a very close and active neighbourhood group. Assess who was available from our neighbourhood and start assigning tasks...triage as required, then shelter for injured. Able bodied people's care would be secondary to establishing a small community group and care of injured. Assign and manage people to useful and appropriate tasks. This would include assessing what resources for additional temporary shelter are available at hand. This would include cars. Establish and assign people responsible to communicate with similar neighbourhood groups.
Offer help where we could. But this scenario makes you think. We have enough supplies to feed our family for 3 to 4 days but not say 20 people who we take in.
Hard to tell, like to think we'd assist as able particularly with people who traumatised or injured. Wife is a nurse and have fairly good medical supplies and water stored on-site.
My first concern is for my family. I don't mind people on the hill as long as they behave civilised and respect private property. Of course we'll be helping with what we can like blankets shelter food and water if we have, but ultimately is the government responsibility for longer term solution including for those on the hill as they'll be also in need.
Our family evacuation plan is for all family members in Napier to come to my house
Depending on the state of my 100+ year old wooden home (i.e. it withstood the Napier earthquake well) I would provide shelter hot drinks and food where necessary for as many as I could cope with - but if large old wooden house was reduced to matchwood and on fire there is little I could do to help. I have electricity, piped gas, and bottle gas - so providing things were safe could support up to 30 people for up to 3 days.
Take in and look after up to 10 people and direct the others on.
I would be worried for their condition and safety.

**Q3. What would your main concerns be following an influx of evacuees? (Please specify)**

Food, water, warmth, safety of pets
Panic. Being overwhelmed by the number of people wanting to stay. Injuries. Lack of water. Unable to deal with bodily waste. Security of our homes and contents. Looters / violence.
That we would be flooded with more people than we could manage to assist.
Running our own emergency supplies down very rapidly and being at risk of several days (weeks?) without food, water, emergency supplies for either ourselves

or others. Security would also be a concern if societal norms start to fray which must be considered as a possible outcome in the scenario described.
Having enough food and water for them. Being able to accommodate ablution issues if the water is off and we have lots of people here.
How can we feed and accommodate them on the hill if resources are inundated on the flat?
Who may be available to treat injuries? Finding shelter and warm clothing. A water supply. A food supply.
Expected to help a greater number of people than possible.
Having enough water and first aid equipment. Then food. No rioting, keeping people calm.
Panic, crush situations, irrational behaviours in small spaces. Not enough food or water, we have a stash but barely enough for our own family. Toileting would also be a problem. Would try to support children especially. Gas leaks/explosion/fire.
Safety, Water, Food, Warmth.
Ensuring everyone has access to clean water and that there is enough to last for a couple of days. Potentially the volume of people coming onto the hill might cause a panic / rush to get resources.
Water.
Security of property.
To make sure they had food, water, clothing and shelter.
People who are injured, have medical conditions (may have forgotten their medications). Organising food, water supplies and shelter would be a priority.
Our own personal safety.
That they wouldn't all have somewhere to go.
That the infrastructure would not cope.
Everyone's continued safety. Having enough supplies, water, food etc. to assist for an extended period - and perhaps even the emotional pressure of needing to provide assistance to potentially large numbers of people.
Safety, enough water, food, sanitation/toilets.
None.
Injuries / warmth / water / shelter / food / ability for them to connect with their families.
Supplies of food and water; sanitation and security.
Where would they all go? How will they get food and water? Will we have to dig long-drops in our garden? Will people try to invade my home? Will people start fires putting houses at risk? Where will supplies come from?
Water, warm clothing, shelter, food.
Lack of supplies, water, food, blankets, shelter.
Health, sanitation, injuries, fresh water and food. Shelter.

Injured people...walking wounded and critical, water, toilet facilities, shelter and food resources, dealing with fear and aftershocks.
As above, how would we feed everyone and deal with ablutions. Can we trust people who might be desperate?
How long it was going to take to before Tsunami risk was gone? How the community would cope with housing and caring for evacuees? Food / water / medical supplies.
Looting and disregard for private property.
I only have resources for my extended Napier family so would be unable to have more here.
Running out of water - but providing the house was still intact there is a storage tank in ceiling, and a large hot water tank with 60l water stored outside. I would also be concerned that the disaster refugees respected my property - have had 9 Christchurch refugees stay post their earthquake - they were great!
Water.
Safety. Resources.

**Q4. What practical ways could you consider supporting evacuees? (Please specify)**

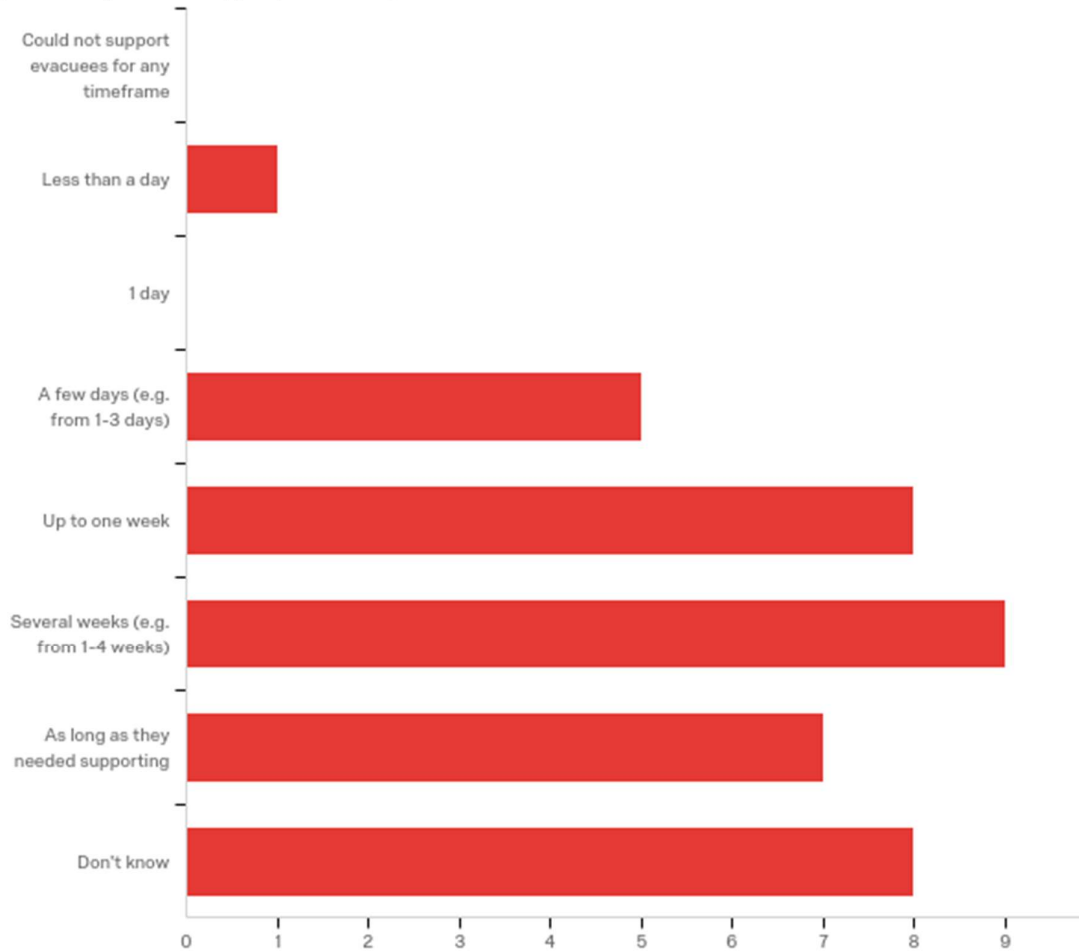
<b>As a household?</b>	<b>As a community?</b>
Sleep space Food Water Clothing	To help wherever I can
Offer lawn space for tents. If room in house after friend and family sheltered offer extra space. Dig long drops	Bring our Neighbourhood Watch Group together daily meeting; share supplies / first aid kit /water resource
Bedding camping equipment/shelter first aid (additional supplies would be required? water supply if still intact share food supplies with as many as could cater for	pool resources e.g.: mobile BBQ's, gas bottles, cook collectively to share resources I have tents but little grass area to erect them so others sections would be essential Assist at a first aid shelter as I am an RN. Assess means of transportation? bikes, motor cycles, whatever is appropriate, pool petrol
Offer shelter, beds for two or three people, warm blankets, some hot food.	Girls High would have large facilities available. We could support that.
Allow people to camp on our lawn. Allow a few highly vulnerable/injured people to stay in the house.	Government(s) incentives to install tanked rainwater storage for drinking. Govt to stock emergency shelters (e.g. All-weather tents) and emergency supplies ON THE HILL. The CD public message is for you and your family to be prepared - not for you to be able to provide emergency services to a large displaced population after a major disaster.

Providing food using our bbq. Providing shelter as we have a large house - has been through the 31 earthquake so hopefully it will hold up again! Providing emotional support and helping keep people warm and comfortable	Supporting each other to support the evacuees. Pooling resources coordinating between ourselves so we can offer things we are good at. e.g. Dr down the road helping with health issues
Two tents and land to pitch them. Three toilets. Two garages. Cooking facilities.	Volunteer work if it happens before I die.
Providing accommodation. Medical assistance as a nurse.	Co-ordinating our resources.
Provide support, food and shelter	Assist with individuals issues.
Having tents and a motor home, shelter could be provided for a dozen or more. Portaloo in motor home with long drops for the waste. Between the deep freeze and vege garden, possibly have enough food for a dozen for 3 days.	Select individuals to be in charge of the basics - someone to ration water and organise a rain collection system. Someone to be in charge of first aid. Someone to be in charge of toilet issues. And 3 or 4 rationing and cooking food. Initially a couple would organise sleeping facilities / shelter for everyone
Inviting them inside where warmer and offering warm clothes food and bedding where possible. Sounds simple, I think the whole situation would be so terrible, scared injured sick people missing their people, ground still shaking, tsunami fear, freezing cold etc. etc. Unthinkable really but a serious possibility, I think about it most days.	Team work, working out where resources most needed
Provide for their immediate needs if supplies are available.	Net-working the neighbours...neighbourhood support
Providing shelter and blankets etc. Providing food / water if we have excess. Providing first aid.	
Shelter	Create a hospital
offer accommodation	not sure
Offering the comforts of our home, and providing food till help arrived. Digging long drops if required, getting food cooked, finding additional water supplies, i.e. tanks that may have survived the earthquake.	Assisting the medical personal we have in our street to help injured people. Organise any rescue parties as and if required. Organise additional food gathering, ruined supermarket stock if able to be salvaged, i.e. tinned goods. Combining our food and water resources. Providing accommodation, clothing, for evacuees and facilities for pets. Provide activities for children quickly to distract them and lessen any trauma.

I live at the end of a cul-de-sac which has the advantage of flat areas and a garage plus my home where people could be supported. The disadvantage would be that we could be cut off. I have an emergency kit, but realistically how can this support a large number of evacuees????	There does need to be a plan, where to get medical support, food and water supplies. Napier Girls High school is directly behind our street, this could be a good central area for people to congregate as well as where supplies could be stored. Another concern I have is vehicles blocking the streets, again the school has ample parking areas.
I'm really not sure	Follow instructions and recommendations from Civil Defence
Offering them somewhere to eat and shelter and use the toilet. If necessary to sleep.	Offer clothes and bedding to those that lost everything in their homes.
Have as many people as possible in my home where they are warm and safe, particularly families with young children.	Use our strengths to assist, i.e. those with medical background set up a medical area, etc.
Keeping extra emergency supplies of food & water, basic medical items - providing shelter where possible as needed.	Having emergency plans in place to supply tanked water, food, shelter to large numbers on the hill BEFORE a disaster event takes place - have set congregation areas pre-allocated on the hill, e.g. the schools, to be used as safe shelter zones for large numbers, information points for finding missing family etc. - a place where hill residents could pool their supplies for evacuees and offer shared support.
Provide shelter, water, food	
See previous response.	
shelter / comfort / food /	as above
Take in people we know (up to 10)	By doing our bit as a household until outside help is available.
Could give out the few blankets I have. If my house was ok I could have some people inside, and in the yard.	Help set up a soup stand if there was any food available.
Take as many as we can into our home favouring small children and elderly contact family members from out of area to let them know what's happening to them	Provide forms of shelter food any medical assistance seek out doctors nurses
blankets, shelter (within reason), water if available	see above, water if available
Share food and water, chat with people and try to keep them calm and keep their moral up.	Help with food and water, help them get organised and set up food and medical care stations. Get blankets and clothes from the houses and distribute under evacuees

Shelter, tools and equipment, bbq, water, emergency leadership experience (Fire Service).	A strong neighbourhood group...all doers, leaders and practical people. Emergency experience...nurse, doctor, ex fire fighter, communications experience.
food and shelter	food and shelter
Shelter Water Food Medical assistance	Supplies: tents, camping equipment, food
Temporary accommodation. Whatever else we can.	
We have water food bedding for family only in our plan	I don't know, there is no plan
As mentioned earlier	We do have an active neighbourhood watch so could pool resources.
Water, food, shelter.	Water, food, shelter, communication.
Open house, host people, get stores of food	get networking, know the resources and capabilities available

**Q5. How long would you be willing to support evacuees (in the ways you have specified previously)? (Tick one)**



Answer	%	Count
Could not support evacuees for any timeframe	0.00%	0
Less than a day	2.63%	1
1 day	0.00%	0
A few days (e.g. from 1-3 days)	13.16%	5
Up to one week	21.05%	8
Several weeks (e.g. from 1-4 weeks)	23.68%	9
As long as they needed supporting	18.42%	7
Don't know	21.05%	8
Total	100%	38

**Q6. Why did you choose the answer you did for Question 5? (Please specify)**

Because I could be an evacuee somewhere else and would expect the same generosity. You just help people in need
Would depend on the state of friends and family first. Depends on supplies; unlikely to last more than a few days for a group of people.
We have a large home and could cater for an extended period. 3 car garage could be cleared out to accommodate people. Neighbours house is empty most of the time so would look at all options to accommodate more.
We are elderly and our resources are limited.
Up to a week with conditions - i.e. camping on the lawn, staying in the house if it is habitable, no security risks presented. It seems like the 6th and 7th choices are completely unrealistic for most people depending on how "support" is defined.
Because you can't leave people out in the cold when they need help and assistance. It would be wrong to tell them to leave if they had nowhere to go. We would have to ration food if it came to that but we could not abandon people
I would start to hate them after a month and wonder why they aren't using government-offered facilities.
Because people require support.
If people had no homes, or Family to provide support, it seems natural to provide shelter for as long as possible.
We could possibly accommodate longer but not in the numbers I would anticipate on the actual day, people would hopefully be evacuated off the hill, I'd be happy to accommodate for a while but not in huge numbers, I have children age 7 and 3 and would want the least amount of impact trauma - like any parent. Too be honest I'd probably want to get us out of Hawkes Bay as soon as possible to get away from terrifying aftershocks. I'm scared of any earthquakes never mind mega quakes.
From information available it can take up to 3 days for emergency agencies.
Unsure what would be required / how much resources we'd have in the house to support people.
Realistically then help should arrive.
Gut feeling.
I think after that period of time evacuees would have been able, and will want to perhaps relocate to family or friends in other areas, and they would want to be out of a disaster area as fast as possible that had no infrastructure, water sewerage, schools, shops etc. People tend to want to resume a normal lifestyle, especially so if they have dependants, it also reduces the risk of PTSD and ongoing mental issues going forward.
How long is a piece of string! There are so many variables, there is no way I can be more specific.
Ideally I would like to think I would support them for as long as they needed but you don't know what the impact of the disaster will have on yourself and your family and friends that will come first.
It would really depend on the situation of the city. If things are just totally ruined and life has not gone back to normal then the time frame would be longer. But if things continue as they were before then I would hope to do the same.



I would expect that after one week we would get assistance from civil defence and the rest of the country to help with evacuees.
We would be willing to support evacuees as long as they were in immediate need, however this would be dependent on certain practicalities such as the amount of resources we had available.
I'd have to ensure my new-born and 3 year old were taken care of and that I had enough supplies of water and food.
Depending on water facilities - loos etc.
if this plays out - Napier South / Onekawa will be toast - so there will be disruption everywhere.
Practicalities - sanitation and dwindling supplies would make any longer difficult.
I am retired and live alone and do not keep a big supply of food and water. I have no idea how far I could stretch my larder staples.
I would hope someone would do the same for me if need be and because that is just the way my family is.
Because I would like to think that someone would be able to do the same if situation would be reversed.
Hopefully by then outside help would have arrived, if not, one does as one has to do and do the best you can.
That is what we do in New Zealand, we would all be on the same rock, with the same problems so we help and support each other regardless of who we are for as long as we can. So long as we had water, we could survive quite well with rationed food for quite some time.
As per previous answer. I would like to be able to offer any support but you have got me thinking would this put my family at risk if I could not feed this because I had been feeding everyone else.
Like to think that I'd receive same support if tables were turned.
Trying to be realist.
Do not have the resources.
Because I could not support a horde for a long time without access to fresh resources. But would be willing to take 1 family for as long as needed support if our home remained habitable.
I would hope that other services would be available after a week.

# Understanding residents' capacities to support evacuated populations : A study of earthquake and tsunami evacuation for Napier Hill, Napier, Aotearoa New Zealand.

Payne, B

2019-12-19